

## CLAIMS

What is claimed is:

1. A generator, comprising:
  - a fuel source;
  - an oxygen-based compound capable of releasing oxygen;
  - an engine capable of generating power by reacting said fuel with said oxygen, said reaction producing an exhaust product; and
  - an exhaust product absorbent.
2. The generator in accordance with claim 1 wherein said oxygen-based compound and said exhaust product absorbent are the same material.
3. The generator according to claim 1 wherein the oxygen-based compound releases oxygen when heated.
4. The generator according to claim 1 wherein said oxygen source comprises potassium superoxide ( $\text{KO}_2$ ) and a second reagent selected from the group consisting of sodium peroxide ( $\text{Na}_2\text{O}_2$ ), potassium oxide ( $\text{K}_2\text{O}$ ), calcium oxide ( $\text{CaO}$ ), and combinations thereof.
5. The generator according to claim 1 wherein said engine is an internal combustion engine.
6. The generator according to claim 1 wherein said engine is an external combustion engine.
7. The generator according to claim 1 wherein said fuel is fed to said engine at a desired rate so as to generate power at a desired rate.
8. The generator according to claim 1 wherein heat from said combustion is applied to said oxygen-based compound.
9. The generator according to claim 1 wherein heat is exchanged between said exhaust gases and said oxygen.

10. The generator according to claim 1 wherein said exhaust gas absorbent is capable of absorbing an exhaust gas at substantially the same rate as the rate at which said exhaust gas is generated such that pressure in the generator does not increase.
11. The generator according to claim 1 wherein the fuel source comprises at least one hydrocarbon.
12. The generator according to claim 11 wherein the fuel source comprises an oilfield production fluid.
13. A power source for use in drilling, well completion or servicing operations, comprising:
  - a fuel source;
  - an oxygen-based compound capable of releasing oxygen; and
  - an engine capable of generating power by reacting said fuel with said oxygen; wherein said engine is mechanically connected to an oilfield tubular.
14. A power source for use in drilling, well completion or servicing operations, comprising:
  - a fuel source;
  - an oxygen source;
  - an engine capable of generating power by reacting said fuel with said oxygen, said reaction producing an exhaust product; and
  - an exhaust product absorbent positioned to absorb said exhaust product; wherein said engine is mechanically connected to an oilfield tubular.
15. A fuel cell, comprising:
  - an anode;
  - a source of hydrogen in fluid contact with said anode;
  - a cathode;
  - an oxygen-based compound capable of releasing oxygen into contact with said cathode; and

a circuit electrically connecting said anode to said cathode.

16. The fuel cell according to claim 15, further including a proton exchange membrane separating said anode from said cathode and allowing the passage of protons from said anode to said cathode.
17. The fuel cell according to claim 15 wherein said oxygen-based compound is a solid or a liquid.
18. The fuel cell according to claim 15 wherein the source of hydrogen comprises methanol.
19. The fuel cell according to claim 15, further comprising an exhaust gas absorbent positioned to absorb CO<sub>2</sub> generated by oxidation of said methanol.
20. The fuel cell according to claim 19 wherein said oxygen-based compound and said exhaust product absorbent are the same material.
21. A method for generating power;
  - a) providing an engine, a fuel source, and oxygen from an oxygen source;
  - b) reacting said fuel with said oxygen in an engine so as to generate power, wherein said reaction produces an exhaust product; and
  - c) absorbing said exhaust product in an exhaust product absorbent.
22. The method of claim 21 wherein steps b) and c) are carried out in a well.
23. The method of claim 21 wherein steps b) and c) are carried out underwater.
24. The method according to claim 21 wherein the oxygen source comprises an oxygen-based compound that releases oxygen when heated, wherein step a) includes heating the oxygen source.

25. The method of claim 24 wherein the oxygen source is heated by exchanging heat between the exhaust gases and at least one of said oxygen source and said fuel source.
26. The method according to claim 21 wherein said oxygen source and said exhaust gas absorbent are the same material.
27. The method according to claim 21 wherein said oxygen source comprises potassium superoxide ( $\text{KO}_2$ ) and a second reagent selected from the group consisting of sodium peroxide ( $\text{Na}_2\text{O}_2$ ), potassium oxide ( $\text{K}_2\text{O}$ ), calcium oxide ( $\text{CaO}$ ), and combinations thereof.
28. The method according to claim 21 wherein said engine is an internal combustion engine.
29. The method according to claim 21 wherein said engine is an external combustion engine.
30. The method of claim 21 wherein the exhaust gases are absorbed at substantially the same rate as the rate at which they are generated.